

PRELIMINARY RENEWABLE RESOURCE ASSESSMENT WORKSHOP

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California Energy Commission



Preliminary Renewable Resource Assessment

OVERVIEW

- Objective
 - Assist CPUC in completing the mandated transmission plan for the Legislature by the end of the year.
- Our Commitment
 - Select target years (2005, 2008, and 2017)
 - Assess potential beyond 2017
 - Assess locational development potential
 - Assess supply mix

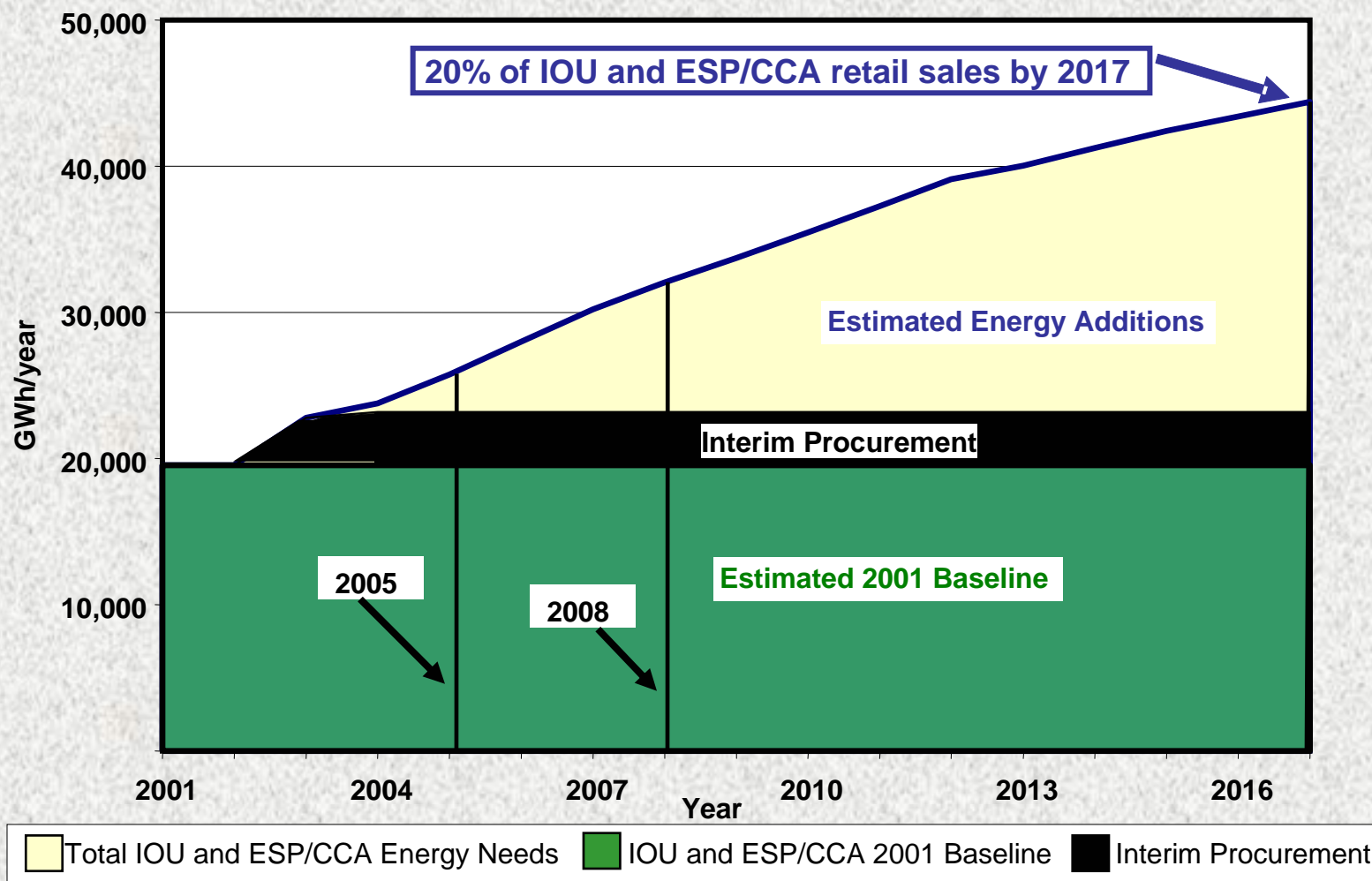
Preliminary Renewable Resource Assessment

APPROACH

- Energy Assessment of RPS Need
- Assessment of California's Existing, Proposed and Remaining Potential
- Assessment of Out-of-State Potential
- Development of Plausible Scenario



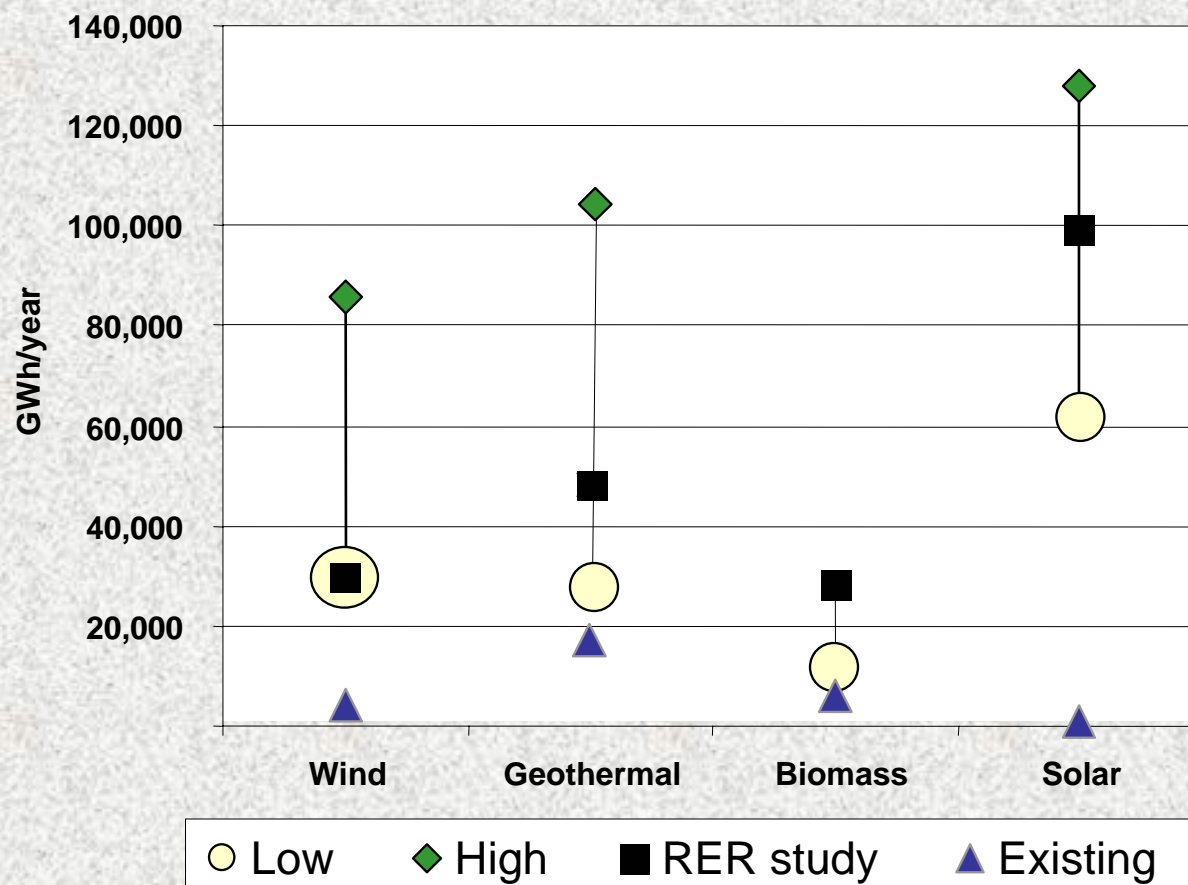
Estimated Baseline, 2003 Interim Procurement, Additions to meet RPS



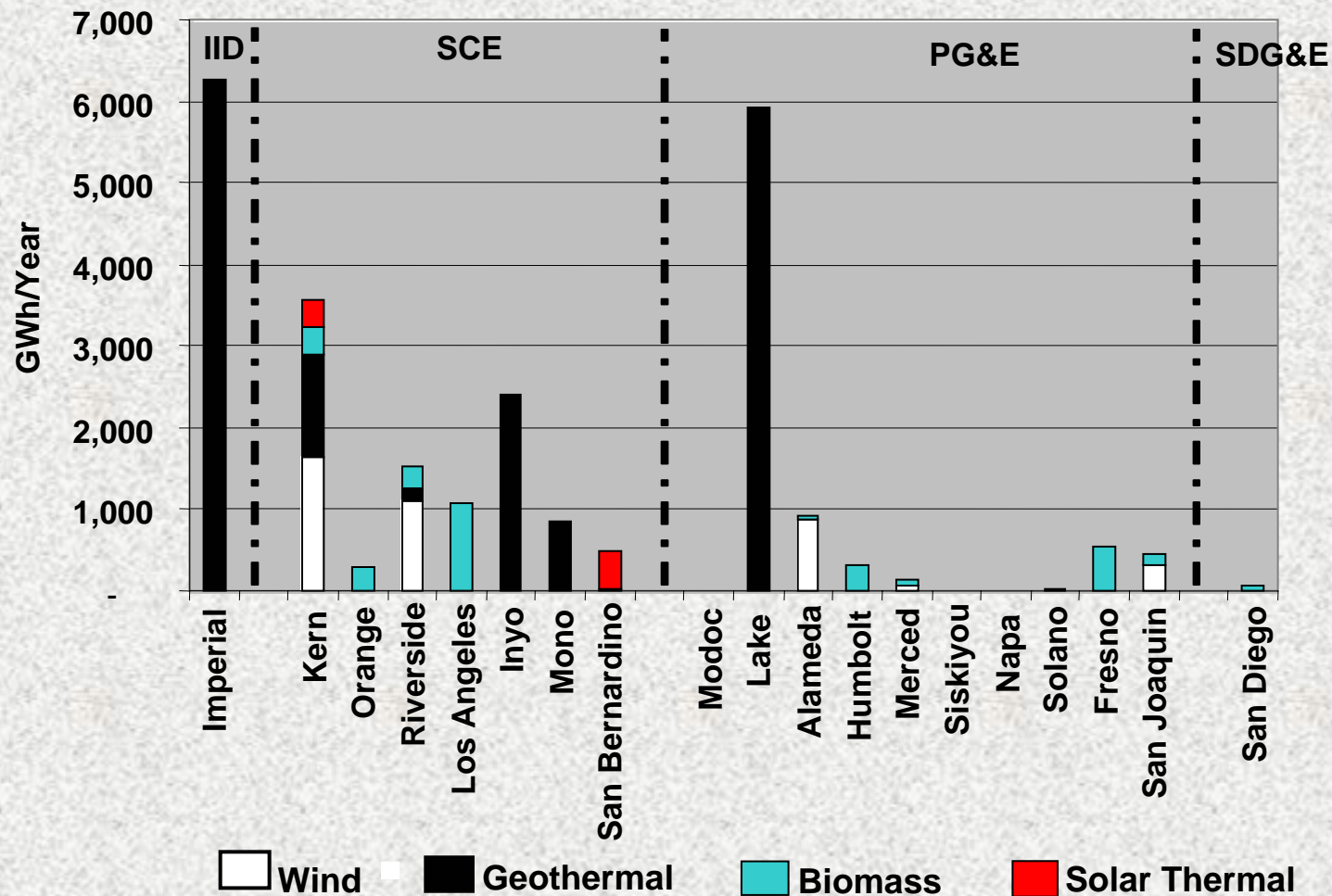
Estimated RPS Additional Procurement Beyond Baseline and 2003 Interim Procurement for IOUs and ESP/CCAs (Cumulative GWh/year)

	2005	2008	2017
PG&E			
Utility	1,253	4,169	9,521
ESP/CCA	188	489	1,314
SCE			
Utility	756	2,965	5,123
ESP/CCA	259	677	1,873
SDG&E			
Utility	0	319	2,721
ESP/CCA	84	223	650
Total NEW			
Utility	2,009	7,453	17,365
ESP/CCA	531	1,389	3,837
	2,540	8,840	21,200

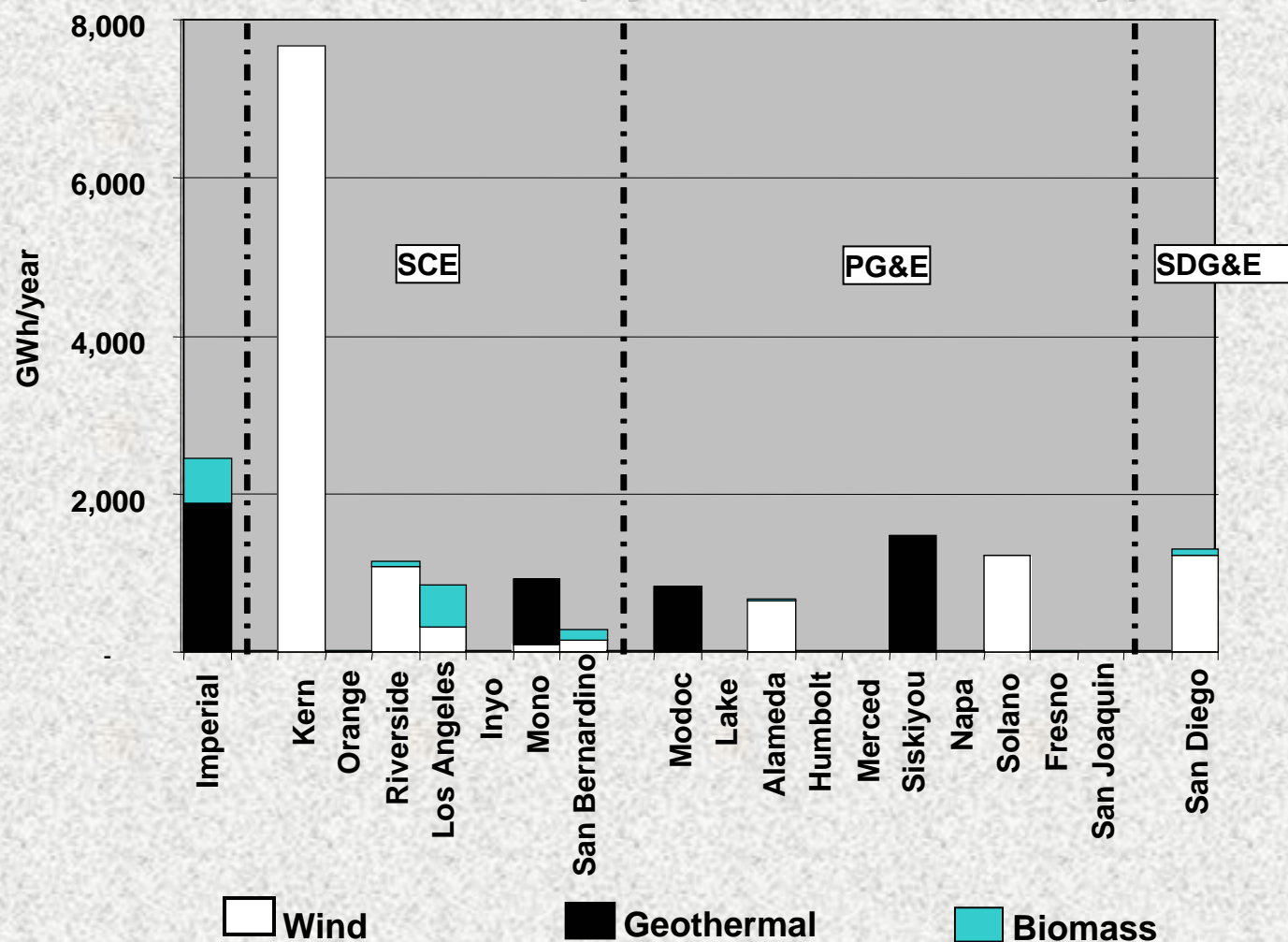
Range of Technical Potential in California by Technology (GWh/year)



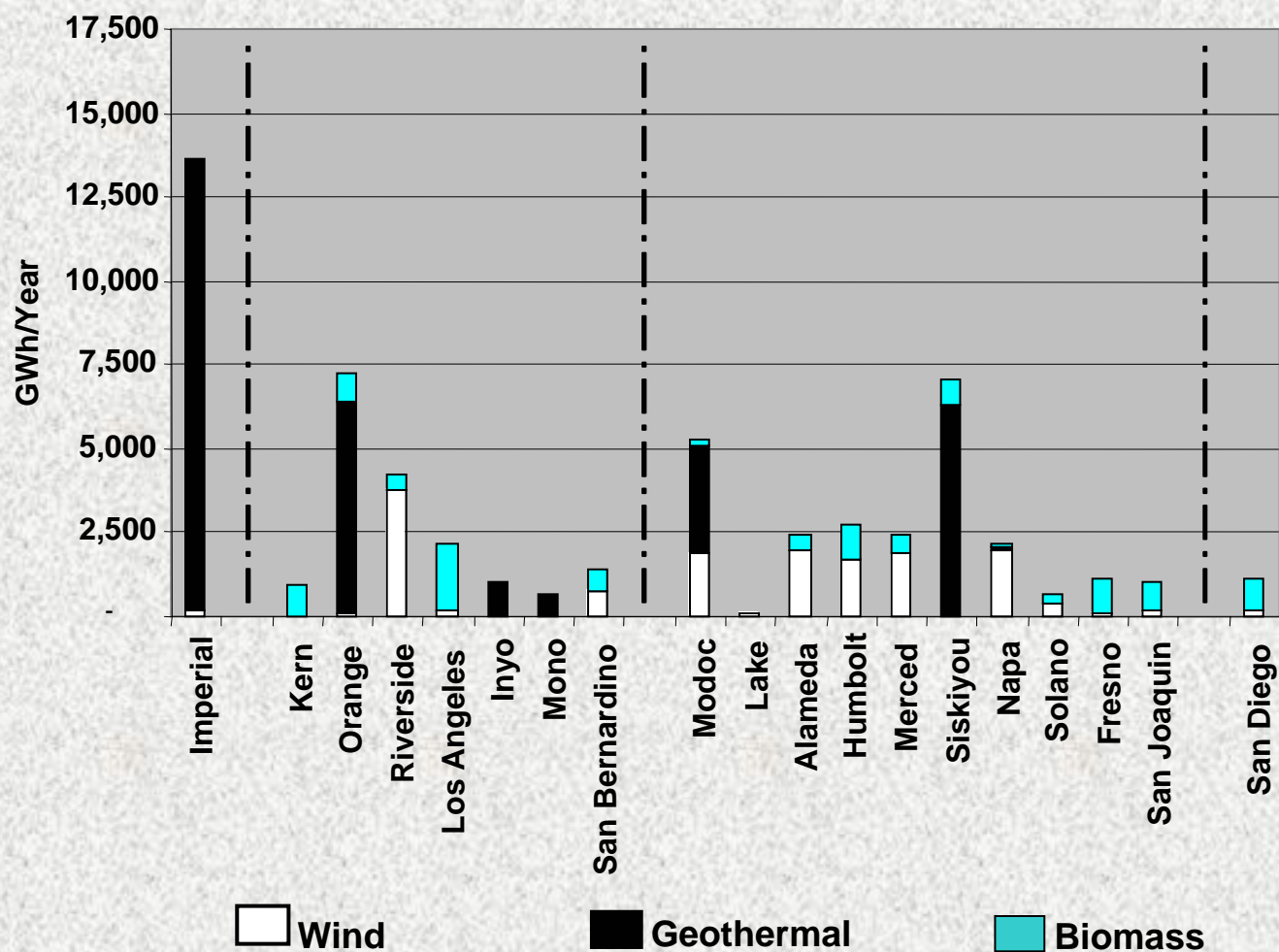
Electricity Produced from Existing Renewable Energy Resources in California's Top 19 Counties



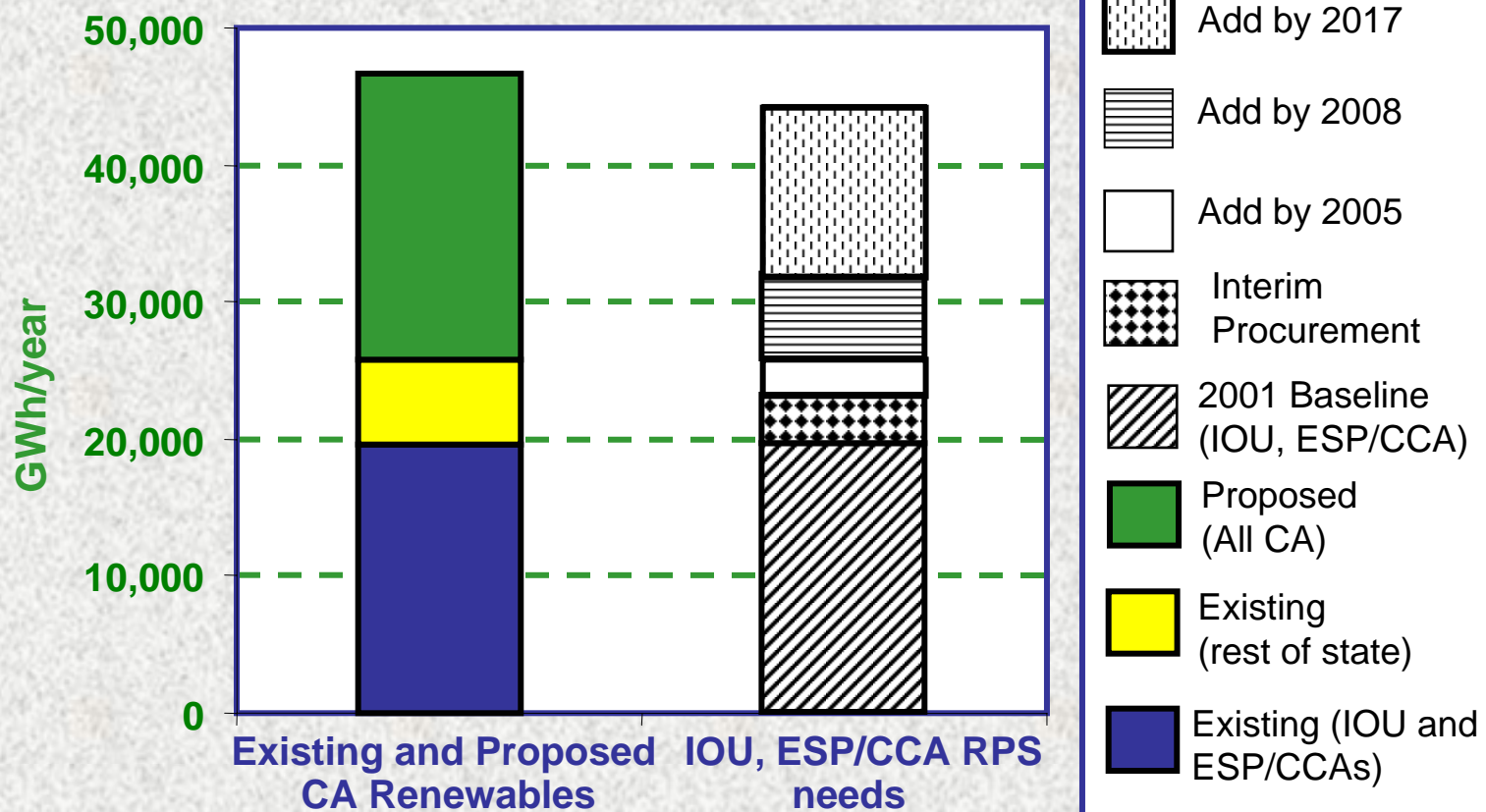
Proposed Renewable Generation in California's Top 19 Counties (by service territory)



Remaining Renewable Energy Potential Wind, Geothermal, and Biomass in California's Top 19 Counties



Existing and Proposed Renewables vs. Estimated RPS Requirements



Preliminary Renewable Resource Assessment

PLAUSIBLE SCENARIO

- Investor Owned Utility Needs Assessment
- Direct Access Accounting
- Energy Supply for Needs
- Capacity Supply for Needs



Additional Supply to Meet RPS Demand (GWh/year)

Pacific Gas and Electric Company

	2005	2008	2017	Proposed	Remaining Potential
Siskiyou (geothermal)		800	680	1,480	6,280
Solano (wind)	400	200	630	1,230	380
Modoc (geothermal)			830	830	3,130
Alameda (wind)		200	440	640	1,930
Other wind					8,970
Other geothermal					930
Other biomass	125	55	345	525	13,380
PG&E TOTAL	525	1,255	2,925	4,705	35,000

Additional Supply to Meet RPS Demand (GWh/year)

Southern CA Edison Company

	2005	2008	2017	Proposed	Remaining Potential
Kern (wind)	1,000	2,600	4,065	7,665	
Mono (geothermal)			830	830	670
Riverside (wind)	140	245	700	1,085	3,760
San Bernardino (wind)		160		160	740
Los Angeles (biomass)		550		550	2,020
Los Angeles (wind)		310		310	160
Other wind			90	90	360
Other geothermal					7,440
Other biomass			210	210	4,270
SCE TOTAL	1,140	3,865	5,895	10,900	19,420

Additional Supply to Meet RPS Demand (GWh/year)

IID and SDG&E

	2005	2008	2017	Proposed	Remaining Potential
Imperial Irrigation District					
Imperial (geothermal)	800	580	2,355	1,890	13,450
Imperial (biomass)			560	560	
Imperial (wind)					230
IID TOTAL	800	580	2,915	2,450	13,680
San Diego Gas & Electric Company					
San Diego (wind)		600	625	1,225	150
San Diego (biomass)	75			75	950
SDG&E TOTAL	75	600	625	1,300	1,100

TOTAL Additional Supply to Meet RPS Demand (GWh/year)

	2005	2008	2017	Proposed	Remaining Potential
PG&E	525	1,255	2,925	4,705	35,000
SCE	1,140	3,865	5,895	10,900	19,420
IID	800	580	2,915	2,450	13,680
SDG&E	75	600	625	1,300	1,100
TOTAL	2,540	6,300	12,360	19,355	69,200

California RPS Supply Scenario in MW

Pacific Gas and Electric Company

	Capacity Factor	2005	2008	2017	Proposed	Remaining Potential
Siskiyou (geothermal)	90%		100	85	185	805
Solano (wind)	35%	130	65	205	400	125
Modoc (geothermal)	90%			105	105	400
Alameda (wind)	35%		65	145	210	630
Other wind	35%					2,925
Other geothermal	90%					120
Other biomass	80%	20	5	50	75	1,910
PG&E TOTAL		150	235	590	975	6,915

California RPS Supply Scenario in MW Southern CA Edison Company

	Capacity Factor	2005	2008	2017	Proposed	Remaining Potential
Kern (wind)	35%	325	850	1,325	2,500	0
Mono (geothermal)	90%			105	105	85
Riverside (wind)	35%	45	80	230	355	1,225
San Bernardino (wind)	35%		50	0	50	240
Los Angeles (biomass)	80%		80	0	80	290
Los Angeles (wind)	35%		100	0	100	50
Other wind	35%			30	30	120
Other geothermal	90%					945
Other biomass	80%			30	30	610
SCE TOTAL		370	1,160	1,720	3,250	3,565



California RPS Supply Scenario in MW

IID and SDG&E

	Capacity Factor	2005	2008	2017	Proposed	Remaining Potential
Imperial Irrigation District						
Imperial (geothermal)	90%	100	75	300	240	1,710
Imperial (biomass)	80%			80	80	
Imperial (wind)	35%					75
IID TOTAL		100	75	380	320	1,785
San Diego Gas & Electric Company						
San Diego (wind)	35%		195	205	400	50
San Diego (biomass)	80%	10			10	135
SDG&E TOTAL		10	195	205	410	185

TOTAL California RPS Supply Scenario in MW

	2005	2008	2017	Proposed	Remaining Potential
PG&E	150	235	590	975	6,915
SCE	370	1,160	1,720	3,250	3,565
IID	100	75	380	320	1,785
SDG&E	10	195	205	410	185
TOTAL	630	1,665	2,895	4,955	12,450

Preliminary Renewable Resource Assessment

- For more information

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- For copies of the report

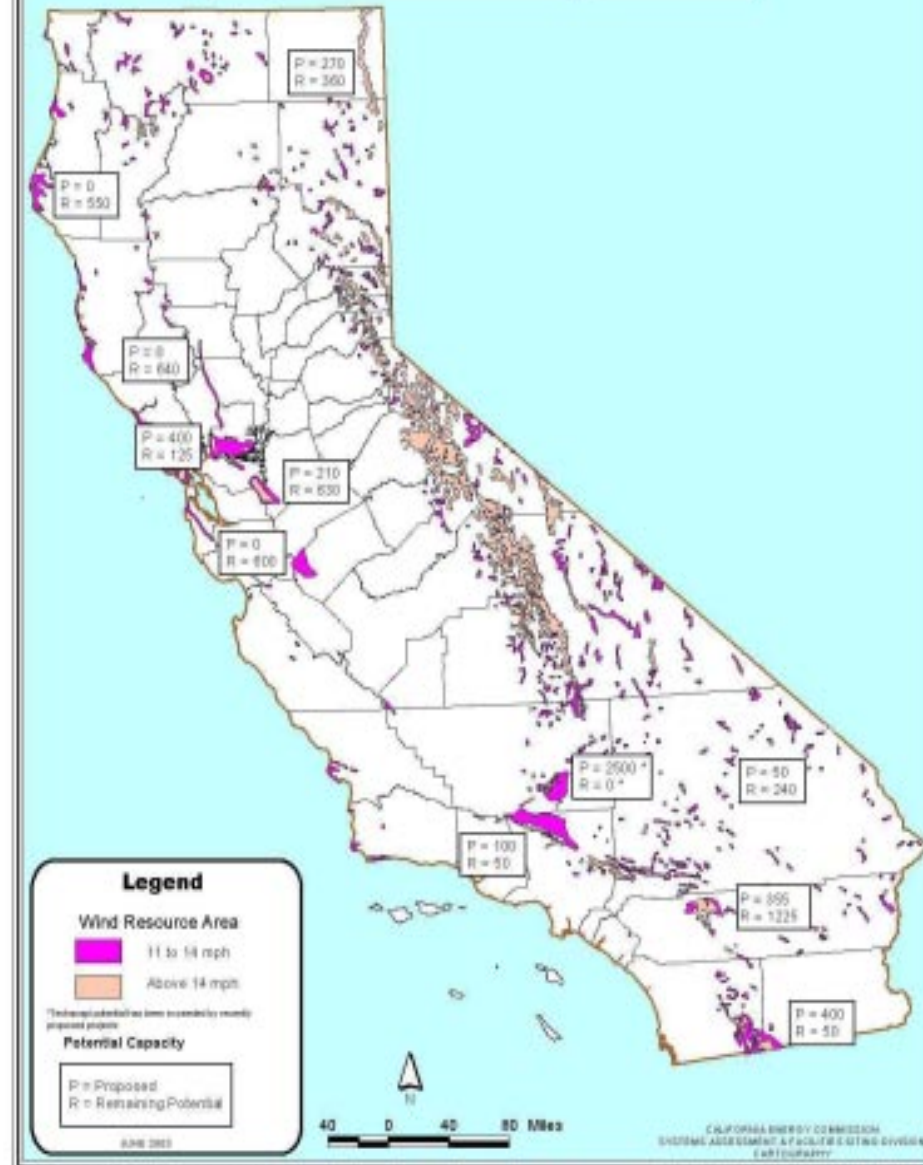
www.energy.ca.gov/energypolicy/index



California Geothermal Resources (MW) Proposed and Remaining Potential



California Wind Resources (MW) Proposed and Remaining Potential



Map of California Counties

